

A NEW GENERIC KEY TO THE NEW ZEALAND CAVE WETA GENERA (ORTHOPTERA: RHAPHIDOPHORIDAE)

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ABSTRACT

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A revised generic key to the cave weta genera (Rhaphidophoridae) of New Zealand is presented based on published descriptions. Taxonomic characters used to identify each genera are also listed in table form in an attempt to clarify the confusion about the identification of specimens.

KEYWORDS: Cave weta - Rhaphidophoridae - revised generic key - taxonomic characters.

INTRODUCTION

The last generic key to be published on the New Zealand cave weta, family Rhaphidophoridae, was by Richards (1961b). Her misgivings about the practicality of the key (Richards 1958b) are justified because many of the generic descriptions she used were based on Hutton's (1897) original descriptions. Richards has re-examined the majority of genera and many of Hutton's original descriptions are inadequate. A revised key is required as new genera have been discovered and work on correcting the original mistakes has not been summarised into a key.

A key and tables which describes taxonomic characters for the 18 known genera of New Zealand Rhaphidophoridae, including offshore islands, is presented based entirely on descriptions in the literature.

Five new genera have been established since 1961: *Petrotettix*, *Setascutum*, *Notoplectron*, *Insulanoplectron*, and *Dendroplectron*. Richards (1958a) established the genus *Novoplectron*, though this genus was not included in the 1961 key. There are also many unidentified specimens in various collections around New Zealand that are likely to belong to unnamed genera.

In this key, diagnostic characters for five genera have been changed. Richards (1972) redescribed the genus *Pharmacus* with one apical spine on middle femora (absent in 1961b). Richards (1959) redescribed the genus *Pleioplectron* with one apical spine on hind femora (absent in 1961b) and eight apical spines on hind tibiae (six in 1961b). I have found it necessary to make further changes to *Macropathus*, *Talitropsis* and *Turbottoplectron* as the use of linear spine patterns in 1961 is not as reliable as apical spine numbers or shape of the subgenital plate (Richards 1958a) by which I have tentatively redefined the genera. Generic descriptions of the remaining genera stay the same though confusion still exists with *Isoplectron* and *Weta*.

I also draw attention to four species that have characters that differ from their generic descriptions. These are: *Petrotettix nigripes*, no apical spines on middle femora (one in table, Richards 1972); *Pleioplectron diversum*, two apical spines on fore femora (one in table, Richards 1959); *Turbottoplectron cavernae*, no apical spine on hind femora (one in table, Richards 1961a) and *Weta chopardi*, no spines on fore femora (two in table), one spine on middle femora (two in table) and no spines on the hind

femora (two in table, Yeates 1965). These are not weaknesses of the revised key but are exceptions already noted in the literature.

A number of couplets in the revised key are taken directly from Richards (1961b; 1972). Footnotes in the key indicate that the genus, or at least the type species of the genus, is present on an offshore island. Tables 1 and 2 list the generic characters of apical spine numbers for the femora and tibiae of each leg and subgenital plate shape. The description and diagram of the subgenital plates are from the type species for each genus except for *Isoplectron*, *Gymnoplectron* and *Turbottoplectron*. The female plate shape for *Ischyroplectron* was not described or drawn when first found and has since been lost and pictures are not given with the original description of *Paraneonetus*. Also the apical spine numbers on the femora of *Talitropsis* are given as 0-2 because variation exists within the genus, probably as a function of ecology and habitat (Richards 1958a). However, the number

of apical spines on the tibiae is a constant character.

I must stress the importance of using more than one character to identify specimens as variation is wide-spread and often leads to confusion. With that in mind this revision may again need updating when generic characters are checked with actual specimens. At present no one collection contains specimens from all the known genera and much of the existing material is unsorted. This makes it difficult to check and name material but it is hoped this preliminary key will fill a current need and will be a fore-runner to a more complete and modern analysis of the Rhaphidophoridae of New Zealand.

KEY TO THE RHAPHIDOPHORIDAE GENERA OF NEW ZEALAND

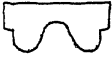

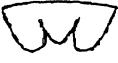
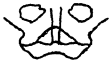





























1. Fore femora with at least one apical spine. **2**
Fore femora without apical spines. **3**
2. Fore femora with one apical spine. **7**
Fore femora with two apical spines. **13**
3. Hind tibiae with two pairs of apical spines. *Isoplectron*
Hind tibiae with four pairs of apical spines. **4**
4. Subgenital plate of female trilobed, of male bilobed. *Notoplectron*¹
Subgenital plate of female bilobed, of male triangulate. **5**
5. Fore tibiae with two apical spines and middle tibiae with three. *Setascutum*
Fore and middle tibiae each with four apical spines. **6**
6. Dorsal valve of ovipositor with serrated dorsal margin, suranal plate of male with

Table 1. Taxonomic characters of Apical Spine numbers from the Femora and Tibiae of the front (F), middle (M) and hind (H) legs.

Genus	Apical Spine Number					
	Femora			Tibiae		
	F	M	H	F	M	H
<i>Isoplectron</i>	0	1	0	2	3	4
<i>Notoplectron</i>	0	1	0	4	4	8
<i>Setascutum</i>	0	1	0	2	3	8
<i>Pertotettix</i>	0	1	0	4	4	8
<i>Pharmacus</i>	0	1	0	4	4	8
<i>Talitropsis</i>	0-2	0-2	0-2	2	3	4
<i>Macropathus</i>	1	1	1	4	4	6
<i>Insulanoplectron</i>	1	2	0	4	4	8
<i>Gymnoplectron</i>	1	2	2	4	4	8
<i>Pleiopectron</i>	1	2	1	4	4	8
<i>Novoplectron</i>	1	2	1	4	4	8
<i>Turbottoplectron</i>	1	2	1	4	4	8
<i>Neonetus</i>	2	2	0	2	2	4
<i>Weta</i>	2	2	1	4	4	4
<i>Dendroplectron</i>	2	2	0	4	4	6
<i>Ischyroplectron</i>	2	2	1	4	4	8
<i>Pallidoplectron</i>	2	2	1	4	4	8
<i>Paraneonetus</i>	2	2	1	4	4	8

¹ Campbell Island

Table 2. Taxonomic Characters of Subgenital Plate Shape: Description and Diagram.

Genus	Female		Male	
<i>Isoplectron</i>	Bilobed		Triangular	
<i>Notoplectron</i>	Trilobed		Bilobed	
<i>Setascutum</i>	Bilobed distally		Triangular	
<i>Petrotettix</i>	Bilobed, acute apex		Triangular	
<i>Pharmacus</i>	Bilobed distally		Triangular	
<i>Talitropsis</i>	Deeply notched		Trilobed	
<i>Macropathus</i>	Rounded apex		Triangular	
<i>Insulanoplectron</i>	Trilobed		Triangular, grooved	
<i>Gymnoplectron</i>	Wide margin		Triangular, rounded	
<i>Pleioplectron</i>	Bi- or trilobed		Trilobed	
<i>Novoplectron</i>	Broas, wide		Short, Abrupt	
<i>Turbottoplectron</i>	Truncate		Long, triangular	
<i>Neonetus</i>	Small, incised		Keeled	
<i>Weta</i>	Small, notched		No styli	
<i>Dendroplectron</i>	Absent? or V-shape		Triangular	
<i>Ischyroplectron</i>	Unknown	?	Triangular	
<i>Pallidoplectron</i>	Two tubercles		Triangular	
<i>Paraneonetus</i>	Trilobed	NA	Broad, rugose	NA

serrated distal margin.

Petrotettix

Dorsal valve of ovipositor with smooth dorsal margin, suranal plate of male with distal margin smooth.

Pharmacus

7. Middle femora with only one apical spine.

8

Middle femora with two apical spines. 9

8. Fore tibiae two, middle tibiae three and hind tibiae with four apical spines.

Talitropsis

Fore and middle tibiae with four apical spines, hind tibiae with six.

Macropathus

9. Hind femora without apical spines.

*Insulanoplectron*²

Hind femora with one or two apical spines. 10

10. Hind femora with one apical spine. 11

Hind femora with two apical spines.

Gymnoplectron

11. Female subgenital plate two or three lobed. Male subgenital plate has three lobes distally, median lobe keeled.

Pleiolectron

Female and male subgenital plates not lobed 12

12. Female subgenital plate broad, short with wide distal margin. Male with short tri-angulate plate with long abrupt taper, rounded at apex. *Novoplectron*³

Female subgenital plate truncate, tapers to pointed apex distally. Male with long triangu- late plate, tapers to a rounded apex distally.

Turbottoplectron

13. Fore and middle tibiae with two apical spines. *Neonetus*

Fore and middle tibiae with four apical

spines. 14

14. Hind tibiae with less than eight spines.

15

Hind tibiae with eight spines. 16

15. Four apical spines on hind tibiae.

Weta

Six apical spines on hind tibiae.

*Dendroplectron*⁴

16. Metasternum with blunt tubercle.

*Ischyroplectron*⁵

Metasternum without blunt tubercle. 17

17. Fore and middle femora without linear spines beneath. *Pallidoplectron*

Fore and middle femora with 8-10 linear spines beneath.

Paraneonetus

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REFERENCES

- Hutton, F.W. (1897). The Stenopelmatidae of New Zealand. *Transactions and Proceedings of the New Zealand Institute* 29: 208-241.
- Richards, A.M. (1958a). Revision of the Raphidophoridae (Orthoptera) of New Zealand. Part 1. The Raphidophoridae of the Chatham Islands 1954 expedition. *Transactions of the Royal Society of New Zealand* 85: 263-274.
- Richards, A.M. (1958b). Revision of the Raphidophoridae (Orthoptera) of New Zealand. Part 3. The genera *Pachyrhamma* Brunner and *Pallidoplectron* n.g. *Transactions of the Royal So-*

² Snares Island

³ Chatham Islands

⁴ Auckland Islands

⁵ Bounty Islands

- ciety of New Zealand* 85: 695-706.
- Richards, A.M. (1959). Revision of the Rhaphidophoridae (Orthoptera) of New Zealand. Part 5. The genus *Pleioplectron* Hutton 1897. *Transactions of the Royal Society of New Zealand* 87: 319-327.
- Richards, A.M. (1961a). Revision of the Rhaphidophoridae (Orthoptera) of New Zealand. Part 8. The species *Turbotoplectron cavernae* (Hutton) 1900. *Transactions of the Royal Society of New Zealand Zoology* 1: 113-119.
- Richards, A.M. (1961b). Some observations on New Zealand cave-wetas. *Tuatara* 9: 80-83.
- Richards, A.M. (1972). Revision of the Rhaphidophoridae (Orthoptera) of New Zealand. Part 14. Three alpine genera from the South Island. *Journal of the Royal Society of New Zealand* 2: 151-174.
- Yeates, G.W. (1965). An investigation of some Gryllacridoidea (Orthoptera). Unpublished Zoology honours 3 project. University of Canterbury.